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best yet proposed, though he failed as an ethnologist in the attempt to classify races.

In the same manner, but to a less degree, scholars have failed to classify peoples by languages; for languages only to a limited extent represent genetic connections of peoples. Tribes speaking diverse languages have coalesced; and languages have thus been compounded, and language has supplanted language. A linguistic classification, therefore, is not completely ethnic, but it comes nearer to the truth than the technologic classification. If a classification by philosophies were attempted, it also would fail, though it would be superior to the philologic; for opinions last longer than words. A sociologic classification of peoples also fails to exhibit genetic relationships. Arts, languages, states, philosophies, may be classified, each to show genetic relationships; but they each and all together fail to classify mankind in a fundamental and philosophic manner.

Scholars have devoted much time and ingenuity to classify mankind by biologic characteristics, sought for in the color of the skin, the texture of the hair, the form of the skull, the relative proportion of parts, etc. These attempts have all failed. It is probable that in the early history of mankind biologic differentiation progressed so far as to produce some well-marked varieties; but the biologic method of evolution by the survival of the fittest was more and more repealed as the anthropologic methods of evolution gained ground, and the scattered and discrete tribes were more and more commingled by the union here and there of distinct streams of blood, by the spread of arts, that placed all peoples under conditions of artificial environment, and made them more and more independent of natural environment, and by various other anthropologic conditions too numerous and complex to be here set forth. But, altogether, the tendency to differentiate into distinct biologic peoples has been overcome, and the tendency to unification has been steadily increasing: so that the distinctions of biologic varieties of mankind, of which we now have but hints in the biologic characteristics remaining, are gradually being obliterated; and we may confidently predict that in the fourth stage, yet to be reached, race distinctions will be utterly lost.

In the short articles of this review an attempt has been made to give a synopsis of the work in question, to show the relation of 'Dynamic sociology' to current philosophy, and to point out its more important defects. Little space is left for that commendation which its

intrinsic merits deserve. Mr. Ward's presentation of the subject is simple, clear, systematic, and courageous. For its preparation he has explored vast fields of thought; and his conclusions, however they may be questioned, cannot be ignored by those who are interested in modern philosophy. Ward's Dynamic sociology is America's greatest contribution to scientific philosophy.

ELEMENTARY METEOROLOGY.

Elementary meteorology, with meteorological charts and illustrations. By R. H. SCOTT. London, Kegan Paul, Trench, & Co., 1883. 408 p. 8°.

THIS volume, the latest English contribution to the science of meteorology, is not a treatise, as the title indicates. It is, however, an excellent work, treating the subject from a modern stand-point, and sweeping away many untenable theories. We especially note the chapters on the barometer and on the formation of rain and hail. The descriptive chapters collecting all known facts relating to wind and ocean currents are very valuable and well presented.

Our author rejects the once seemingly satisfactory theory, attributing the south-west monsoon winds of India to the rising of heated air above the plains to the north-east of the Himalaya range, and also the theory that the existence of sea-breezes is due to the rising of heated air upon the land near oceans. He, however, adopts this theory of ascending currents of heated air in explaining the formation of cumulus-clouds. It is difficult to see how the atmosphere can be heated, save gradually, in strata parallel to the earth's surface, except on mountain sides. This is the theory adopted by Hann, who regards the cumulus-cloud as simply indicating the layer at which the air has the temperature of the dew-point.

Mr. Scott seems to indorse the theory that there is an ascending current in the centre of a barometric depression, though his storm-chart on p. 355 shows all the wind-directions near the low centre tangent to the isobars. This shows that the air-motion, which at the outside of the storm is directed more or less toward the centre, gradually becomes circular as it approaches the centre. Such a whirl moving over the earth's surface, losing a part of the air in its path, does not require any ascending current at its centre. The same may be said of our author's theory that rain can be formed by rising currents of heated air. In this case, not only is there the doubtful assumption of an ascending current, but

the formation of rain under these circumstances seems disproved, in another place, by the author himself, who rejects the theory that any considerable precipitation can be produced by the mixture of masses of hot and cold air. Mr. Scott acknowledges that nothing definite is known as to the origin of atmospheric electricity; but his conjecture that the coalescence of cloud-droplets into rain-drops may be due to electricity will hardly be accepted by meteorologists at present. The description of a peculiar electrical manifestation observed in the Alps, July 10, 1863, is very similar to that given by Siemens while on Cheops pyramid, April 14, 1859.

The division of thunder-storms into heat and cyclonic is hardly applicable to the United States, where it appears as if no thunder-storms occur, except as largely influenced by, or directly dependent on, the presence of a barometric depression.

The error of more than forty million square

miles in the earth's surface between the equator and 30° north latitude should be corrected in the next edition.

The statement, that at great depths in the ocean a probable uniform temperature of 32° F. prevails, has been disproved by the researches of Professor Verrill and the U. S. fish-commission.

We notice on p. 362 the surprising statement, that, as the central office of the U. S. weather bureau is in the eastern part of the country, there is a great advantage to those predicting storms by the use of the telegraph.

The chart of mean January isobars does not incorporate Stelling's work in Siberia, published in 1879, and accepted by Mohn in the last edition of his Meteorology. Mohn's chart shows a mean pressure over central Siberia of 780 mm. (30.79 in.), while the highest figure in Scott for the same region is 30.4 inches.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

THE thirty-second annual meeting of the American association was opened in the halls of the university of Minnesota, Minneapolis, Aug. 15, at 10.30 A.M. Dr. J. W. Dawson, the retiring president, introduced the president elect, Prof. C. A. Young, who briefly and gracefully expressed his thanks to the association for the distinction they had offered him. After welcomes spoken by the governor of the state and the mayor of the city, the principal address was made by the acting president of the university, Dr. W. W. Folwell, on behalf of the local committee. From his address we print the closing sentences:—

I should do a wrong to my city if I should leave upon you the impression that we are so overwhelmed and engrossed with our material labors as to have no care for the things of the mind and the higher life. If that were true, why should we welcome with so much sincere ardor the assemblage of your association? From the villages of New England, and the farmhouses of the Middle states, our people have brought that perennial curiosity, that thirst for knowledge, that intense though sombre imagination, which have given American civilization and American literature a cast and hue of its own. I must, in a word, praise our system of public schools, both city and state, which under able management and popular support cannot, we believe, be ranked below those of any communities of our size in the Union. Minnesota is the first place which has organized its secondary as well as its primary education, and offered to

every child in the state a free course of studies, from the alphabet to the degree of master of arts. Our churches, goodly in size and number, may speak for the interests of religion. The future will attest the diligence and the fidelity of those who love music and the sister arts, of whom far older cities might be proud. It is thus, however, Mr. President, that we Minneapolitans, alert, pre-occupied, pause in the midst of our labors to welcome your already venerable association. We hail you as the survivors of a generation of great investigators,—the Sillimans, the Baches, the Morses, the Rogerses, who have made their own country famous and their own names as imperishable as science herself. We hail you as the worthy successors of such a generation, perpetuating and enlarging their work. In common with civilized people, we recognize the immense debt of the modern world to science; yet often, no doubt, while we are filling the sky with applause to some lucky inventor, we are not remembering the years, perhaps generations, of inconspicuous and painful labors, carried on in our studies and laboratories, which made the invention possible. Let the inventor have his glory and his profit without envy and without stint; but let us not fail to build the cenotaph of a thousand nameless geometers, stargazers, and natural philosophers, who, working in silence and obscurity, without thought of fame or hope of reward, put it in his power to bless and captivate the world. We are grateful, therefore, to science for the telegraph and the microscope, for chloroform, for the photograph, for all the nameless applications of electricity. To science we owe that magnificent apparatus of transportation which is the crowning and distinctive feature of modern material life. To